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10/790,842	03/03/2004	Shih-Lun Chen	3111-425	2005

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EXAMINER

HERNANDEZ, WILLIAM

ART UNIT PAPER NUMBER

2816

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/790,842

Applicant(s)

CHEN ET AL.

Examiner

William Hernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. Figures 1, 2A, 2B, 3 and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: the word "small" on page 4 line 29 is incorrectly used. Perhaps the applicant meant to say "smaller". Also, on page 5 line 24 the second appearance of the unit for voltage (V) is not preceded by any value. Perhaps the applicant meant to say "0V".

Appropriate correction is required.

3. The claims are objected to because they include reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The terms "low-voltage", "high-voltage" and "low-cost" in claim 1 are relative terms which renders the claim indefinite. The terms "low-voltage", "high-voltage" and "low cost" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

7. The term "receivable" is not a positive limitation. It is not clear if the plural MOSFETs are receiving or not receiving.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Tailliet (6,549,048).

Taillet Fig. 3 shows a main circuit (10, 11), being composed of three P-type (T1, T2, T5) and three N-type (T3, T4, T6) MOSFETs, and the operation thereof being controlled by the voltage over a node A (N2) and a node B (N1); a first protection circuit, being composed of four P-type MOSFETs (T300, T301, T20, T22), for ensuring the voltage at the node A is larger than a specified low voltage value; and a second protection circuit, being composed of four N-type MOSFETs (T310, T311, T21, T23), for ensuring the voltage at the node B is smaller than a specified high voltage value as called for in claim 1.

Regarding claim 2, Taillet Fig. 3 further shows the Schmitt trigger of claim 1, wherein the maximum voltage the plural MOSFETs are capable of receiving is 2.5V.

9. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Chang et al. (6,870,413B1).

Chang et al. Fig. 4 shows a main circuit, being composed of three P-type (T4, T5, T21) and three N-type (T0, T1, T20) MOSFETs, and the operation thereof being controlled by the voltage over a node A (140) and a node B (150); a first protection circuit, being composed of four P-type MOSFETs (T7, T8, T9, T10), for ensuring the voltage at the node A is larger than a specified low voltage value; and a second protection circuit, being composed of four N-type MOSFETs (T11, T12, T13, T14), for ensuring the voltage at the node B is smaller than a specified high voltage value as called for in claim 1.

Regarding claim 2, Chang et al. Fig. 4 further shows the Schmitt trigger of claim 1, wherein the maximum voltage the plural MOSFETs are capable of receiving is 2.5V.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (6,870,413B1).

Chang et al.'s figure 4 discloses the invention set forth in claim 1 but does not disclose expressly a low voltage value of 0.8V as called for in claim 3. Chang et al. teaches in col. 4, line 63, that typical threshold voltages of transistors in a Schmitt trigger circuit range from 0.3 to 1.0V. Therefore, it would be obvious to a person of ordinary skill in the art at the time the invention was made to set a voltage threshold of at least 0.4V to Chang et al.'s circuit and maintain a node (Fig. 4, 140) voltage of 0.8V. Therefore, outside of non-obvious results, the obviousness of selecting transistors' threshold voltages to set up the hysteresis level is an obvious modification of Chang et al., thus, will not be patentable under 35 USC 103(a).

Regarding claim 4, Chang et al. reference does not disclose expressly a high voltage value of 2.5V. Chang et al. teaches in col. 4, line 63, that typical threshold voltages of transistors in a Schmitt trigger circuit range from 0.3 to 1.0V. Therefore, it would have been obvious to a person skilled in the art at the time the invention was made to set a voltage threshold of at least 0.4V to Chang et al.'s circuit and maintain a node (Fig. 4, 150) voltage of 2.5V. Therefore, outside of non-obvious results, the obviousness of selecting transistors' threshold voltages to set

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up the hysteresis level is an obvious modification of Chang et al., thus, will not be patentable under 35USC 103(a).

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tailliet (6,549,048B2) in view of Pizzuto et al. (6,147,566).

Tailliet discloses the invention set forth in claim 1 but does not disclose expressly a native MOSFET in the second protection circuit as called for in claim 5. Pizzuto et al. discloses in Fig. 10 a circuit whose N channel MOS type transistors are native transistors so as to limit the losses in these transistors and so as to enable the use of the circuit with a low supply voltage (col. 13, lines 21-25). Therefore, it would been obvious to a person of ordinary skill in the art at the time of the invention to replace Tailliet's N-type MOSFET's (T310, T311, T21, T23) with native MOSFETS for the purpose of lowering power consumption and to increase efficiency.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (6,870,413B1) in view of Pizzuto et al. (6,147,566).

Chang et al. discloses the invention set forth in claim 1 but does not disclose expressly a native MOSFET in the second protection circuit as called for in claim 5. Pizzuto et al. discloses in Fig. 10 a circuit whose N channel MOS type transistors are native transistors so as to limit the losses in these transistors and so as to enable the use of the circuit with a low supply voltage (col. 13, lines 21-25). Therefore, it would been obvious to a person of ordinary skill in the art at the time of the invention to replace Chang et al.'s N-type MOSFET's (T11, T12, T13, T14) with native MOSFETS for the purpose of lowering power consumption and to increase efficiency.

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Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hirose (6,388,487 B1), Hoeld (6,046,617), Shin (5,874,844), and Singh (6,091,265) are cited to teach Schmitt/hysteresis circuits featuring combinations of P-MOS and N-MOS transistors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Hernandez whose telephone number is (571) 272-8979.

The examiner can normally be reached on Mon.-Fri. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER